REMARKS

Claim Objection under 37 CFR 1.75

Claim 13 has been amended. It is believed that the objection is thereby removed.

Claim Rejection under 35 USC 112

Claims 2-10 and 12 have been modified to reflect the traditional Markush group language of "consisting essentially of". This does not change the scope of the claim. "Consisting essentially of" language of claims in suit renders claims open for inclusion of ingredients which do not materially affect basic and novel characteristics of claimed compositions, and only excludes additional unspecified ingredients which materially affect product's basic and novel characteristics. Syntex (USA) Inc. v. Paragon Optical Inc., 7 USPQ2d 1001 (DC Ariz 1987) (emphasis added). This language is therefore recognized as appropriate Markush group language.

The inclusion of this restriction on the base material creates a difference in scope between independent and dependent claim in which the dependent claim is further restricted.

Claim Rejection under 35 USC 102

Bloys

The Examiner has rejected claims 1, 2, 8 and 9 as being anticipated by Bloys. However, Bloys does not teach a pelletized dense additive using ground base material to create a dry pellet as required by the claims. It is implicit in the current invention that the additives are dry. The entire application speaks to powder additives and compression of such ground additives such that the resulting pellet disperses immediately in the drilling fluid upon hydration. Contrary to the limitation of the current invention, Bloys requires a sponge component in a liquid carrier. Bloys requires that the liquid carrier be non-aqueous so that, upon contact with an aqueous carrier in the well, the sponges will expand and plug the strata. It is the intent of Bloys to maintain the compressed sponge particles in the liquid fluid in the compressed state until they are circulated through the bore. Then, the sponge particles are expanded to block the strata. In contrast, the current invention is a compressed dry additive that expands quickly upon contact with the mud, preferably in the mud pit.

The term "dry" indicates that it is a solid, not a liquid. While there may be some small amounts of residual moisture or oils in the pellet from the base material, the base material and the resulting pellet are considered dry. This is true of asphalt components as well which are usually considered solids. Furthermore, Bloys does not teach a ground material as claimed. Rather, Bloys teaches a sponge material comprising chips or small blocks referred to as "particles" in the specification. (Col. 3, lines 18-21)

Thus, claim 1 requires a ground base material that is compressed into a dry pellet. In contrast, Bloys specifically creates a liquid carrying sponge particles. Claims 2, 8 and 9 depend from claim 1 and therefore incorporate the same limitations. Applicant respectfully submits that Bloys does not teach a dry pelletized dense additive.

Cowan 5076944

The Examiner has rejected claims 1,9 and 11 as being anticipated by Cowan 5076944. Cowan '944 does not create a pelletized dense additive as specifically required by current Claim 1. Nor does Cowan teach the use of ground raw or untreated base material. Base material is further defined on page 7 of the application to be materials that perform the function of lost circulation additive, seepage control additive or additive for modification of rheological properties. Page 9, line 28 of the application indicates that the materials are raw, or untreated. As opposed to creating pelletized dense additive as required in Claim 1, Cowan creates a finely ground additive. Column 3, lines 50. The process for creating Cowan's ground additive includes grinding, treatment to further enhance the breakdown of the particle, extrusion through a die, followed by pulverization in a hammer mill to produce a finely ground product. An aspect of this invention is to chemically treat the cotton burrs to enhance mechanical breakdown. Alkali metal, preferably sodium and/or potassium, hydroxide or basic salt thereof, such as carbonate, sulfite acetate and the like are used. Alternately, anhydrous hydrochloric acid gas is used to treat the material. Column 3, lines 56-68. The purpose of the extrusion through the die is to create shear force to further breakdown the particle to create or enhance certain physical characteristics of the material. The result is a ruptured starch granule. The treated cellulosic material is finely ground. The resulting material is not a pellet, but finely ground particles in the range of 250 to 590 microns. Column 8, l. 38. The resulting powder is less dense than the original material, not more dense. This teaches away from the process of the

current invention which claims a pellet of increased density. Furthermore, the materials in Cowan are not untreated or raw. Just the reverse, they are exposed to alkali metal to treat the materials. The seepage loss reducing additive of Cowan comprises a "particulate additive." Col. 6, l. 59. Cowan does not teach the use of a pelletized dense additive. There is no discussion of increased density. The additive of Cowan is explicitly a ground, particulate mixture, and the seepage control materials are treated. Thus, Cowan does not teach several of the elements required by Claim 1 of the current invention. Dependent claims relate to the additive of the process of claim 1. As described above, the additive created in Cowan is a ground powder additive, not a pellet additive. Even when an intermediate extrusion process is used, it is for the purpose of breaking the starch cells to further enhance the grinding of the material to a fine particulate size for the additive. Also as described above, the additive of Cowan is not untreated but is instead chemically treated. Furthermore, the additive of Cowan does not have a density substantially greater than that of the untreated ground lost circulation and seepage control material as the additive of Cowan is the powder of the treated materials.

Claims 9 and 11 depend from claim 1 and thereby incorporate the same distinguishing limitations as claim 1.

Alexander 4836940

Alexander teaches the use of bentonite extruded through die openings while, at the same time, passing a wiper or scraping blade across the entrance of the die opening. The disclosure of Alexander does not indicate that the bentonite product used in the disclosure is compressed into a product with substantially greater density than that of the ground base material nor that the bentonite is ground. The disclosure centers around the addition of shear force at the die opening by scraping to produce a product which creates unexpectedly improved viscosity and fluid loss characteristics compared to bentonite extruded without the scraping. While pressure is added to the bentonite to force it through the die openings, there is no disclosure that the bentonite is or can be compressed into a substantially more dense state. Furthermore, there is no ground material in Alexander as required by Claim 1. There is no disclosure that the material produced in Alexander has substantially greater density than the base product.

Cremeans

Cremeans discloses that discarded cattle feed can be used as an additive. This organic material is made from treated cottonseed hulls in combination with cottonseed meal, bentonite, some cottonseed lint and a surface active agent. It is the intent of the Cremeans disclosure to have a pellet that does not dissolve, but remains in tact to physically plug the formation through which a bore is being drilled. Cattle feed is typically about 3/4" cube and incorporates a host of ingredients. The teaching of Cremeans requires cotton seed pellets including 40-60% cotton seed meal by weight. Meal is the product of the kernel after the oil has been extracted. This is desirable in cattle feed to meet the requirements that there be sufficient protein. There is also residual oil in the pellets disclosed in Cremeans. Thus, the material disclosed is not a base material which is defined as a lost circulation, seepage or rheological agent. Cotton seed meal ferments and molds, thus making it undesirable. As a result, cotton seed meal is not a standard lost circulation, seepage or rheological agent. The high protein content materials are recognized by those with ordinary skill in the art as being deleterious when used as an additive. Furthermore, cattle feed contains oil, high amounts of protein and, commonly, molasses. Cattle feed used for any length of time would be a fermentation nightmare.

The claims of the present case are limited to ground base material as defined on page 7, line 15-17 of the current specification. The teaching of Cremeans could not have been put into practice in today's deep wells. If this material had been used, the drilling fluid or mud would have been compromised with a matter of a few weeks and it is very expensive to replace the drilling fluid or mud. At the time Cremean's patent was granted, it would have been permissible to circulate solid particles of this size into a shallow land well where the fluid would not remain long in circulation. However, modern techniques would not permit this thus the ingredients of cattle feed are not ground base material. Use of the 3/4" pellets of the Cremeans specification would destroy steerable tubes and down-hole motors and the lie as used in, for example, directional drilling. Operators today require that the lost circulation and seepage control materials be disperse in the mud pit before even circulating down-hole.

Thus, the teaching of Cremeans is not relevant to this case, as this reference does not disclose a pelletized additive from acceptable base materials that are untreated or raw additives.

It is to be noted that the term "raw" as used in connection with lost circulation and seepage control materials as well as rheological additives is understood by the man skilled in the art. It is appropriate to affirmatively indicate that such material has been "treated", if indeed it has been treated. It is also to be noted that once a material is treated, its properties may change and it may not act in the same way as the original starting material. For example, absorption properties could be modified and, in some cases, a pellet of treated material would not have the ability to break up on introduction into the mud pit. Chemical treatments may react with other elements in the well bore. The oil well industry is intensely sensitive to any issue that might cause a termination or interruption of operations. A cessation of operations, for any reason, can give rise to losses of the order of hundreds of thousands of dollars within a very short period of time.

There is no disclosure related to any other organic compositions or combinations of compositions. The "specially treated cottonseed hulls" of Cremeans are distinguished from prior materials such as unginned cotton. Col. 1, l. 60 and 55, respectively. The current claim 1 requires raw, or untreated, base material which is lost circulation and seepage control material. To the extent that this covers cottonseed hulls, such hulls must be untreated contrary to the Cremeans disclosure. Cremeans teaches that the cottonseed must first be delinted and the oil extracted with solvents. Col. 3, ll 1-5. By requiring untreated materials, the current invention utilizes the very oils removed in the Cremeans patent to act as a binder for the pellet.

Cremeans states that it is an advantage of this mixture which includes the surface-active agent that it does not break down immediately upon mixing. "Since the pellets do not immediately break down and absorb large quantities of water, the viscosity of the drilling fluid remains low." Col. 5, l. 20-27. Because of their compressed nature and composition, the pelleted cottonseed hulls are easily mixed and pumped down the well bore without appreciably affecting the viscosity of the drilling fluid until they are in a position to seal off the porous structures. This teaches away from the elements claimed in Claims 1 - 11 of the current invention in that the pellets are specifically left untreated and are of such composition such that they do break down immediately.

Thus, Cremeans does not teach an untreated material which is ground, such material as produced by the practice of Claim 1 breaking down immediately when mixed with the drilling fluid. Claim 1 of the current invention requires that the lost circulation material be reduced to a small

particle size through grinding. Indeed, it is a stated purpose of Cremeans to avoid a grinding step. Col. 3 l. 23.

Cremeans states that to make feed for the cattle, these components are heated and then compressed and extruded as pellets. Cremeans discloses that the advantage of using discarded cattle feed is that it avoids the steps of grinding, shredding, and pretreatment processes required when using other organic waste products. Obtaining ground material is required in the current invention. A shortcoming of the cattle feed is that it does not immediately break down upon contact with the mud but instead maintains its shape and structure as it is added to the mud. They only begin breakdown when they are well down the drilling hole.

Claims 2, 7, 10 and 11 depend from claim 1 and thus contain the same distinguishing limitations as discussed above in relation to Cremean.

Wagener

The Examiner states that claims 1, 2, 5,and 8-12 are anticipated by Wagener which teaches pellets of comminuted paper. These claims, as amended, recite a non-chemically treated material. Wagner, on the other hand, does not anticipate because paper itself is the product of a chemical treatment to wood pulp which may include caustic treatment and bleaching. Furthermore, the ground or shredded paper material is further treated in Wagener by spraying with water and a surfactant before compression. (Col 3, lines 13-17) As such, the paper material is chemically treated and does not anticipate these claims. The element of added water also teaches against the dry pellet as claimed in claim 1 of the current invention. Thus, Wagener does not treat a raw or untreated base material nor does it teach compressing ground base material into a dry pellet.

Claims 2, 5, and 8-12 depend from 1 and include the limitations found therein.

Alexander 4462470

Alexander teaches the use of bentonite extruded through die openings while, at the same time, passing a wiper or scraping blade across the entrance of the die opening. The disclosure of Alexander does not indicate that the bentonite product used in the disclosure is compressed into a product with substantially greater density than that of the ground base material nor that the bentonite

is ground. The disclosure centers around the addition of shear force at the die opening by scraping to produce a product which creates unexpectedly improved viscosity and fluid loss characteristics compared to bentonite extruded without the scraping. While pressure is added to the bentonite to force it through the die openings, there is no disclosure that the bentonite is or can be compressed into a substantially more dense state. Furthermore, there is no ground material in Alexander as required by Claim 1. There is no disclosure that the material produced in Alexander has substantially greater density than the base product.

Armentrout 2836555

The Examiner states that claims 1, 2, 7, and 10 are anticipated by Armentrout which teaches bentonite pellets. Applicant submits that Armentrout does not teach or suggest all of the limitation of the claims. First, Armentrout does not teach a ground material as claimed. Rather, Armentrout teaches a bentonite clay that dried, dehydrated and expanded, but not ground. Second, Armentrout does not teach a material that is not chemically treated as claimed. Armentrout, on the other hand, teaches bentonite pellets are coated with water-insoluble coatings, such as cellulose acetate, urea formaldehyde, resin, polystyrene, nitrocellulose and the like. (Col. 2, line 46 to Col. 3, line 67) As such, the bentonite clay is chemically treated and does not anticipate these claims.

Armentrout 2642268

The Examiner states that claims 1, 2, 7, and 10 are anticipated by Armentrout which teaches bentonite pellets. Applicant submits that Armentrout does not teach or suggest all of the limitation of the claims. First, Armentrout does not teach a ground material as claimed. Rather, Armentrout teaches bentonite clay lumps but does not teach the use of a ground material. The bentonite clay of Armentrout is not ground. The bentonite lumps are introduced into the fluid such that there is a delayed dispersion of the material at which point the material hardens to form an adequate seal. The bentonite clay lumps of Armentrout do not incorporate the required ground base material of the current invention with the substantial increase in density and thus does not anticipate these claims.

Respectfully submitted,

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PATENT

AMENDED CLAIMS

WHAT IS CLAIMED IS:

1.(Amended) A pelletized dense additive for lost circulation, seepage control, fluid loss and control of lubricity, viscosity and rheology in drilling operations, comprising:

a ground raw base material that is compressed into a pellet, said pellet having a density substantially greater than that of the ground base material.

2.(Amended) The pelletized dense additive of claim 1 wherein the base material is selected from the group [substantially] consisting essentially of lignites, leonardites, lignin-based powders, bitumens, lignosulfonates, asphalts, clays, polyacrylate homopolymers and copolymers, cellulosic polymers, xanthan gums, metal silicates, starches, guar gum, cellulosic fibers, fatty acids, amphoterics, carboxymethyl cellulose, welan gum, hydrocarbon resins, barite, hematite, hydroxyethylcellulose, chlorides, bromides, polyphosphates, zinc, gilsonite, graphite, coke and mixtures thereof.

3.(Amended) The pelletized dense additive of claim 1 wherein the base material further includes compounds selected from the group [substantially] consisting essentially of calcium carbonate, mica, diatomaceous earth, Fuller's earth and other silicates, activated charcoal, bauxite, alumina gel, graphite, gilsonite and mixtures thereof.

4.(Amended) The pelletized dense additive of claim 1 wherein the base material further includes compound selected from the group [that substantially consists] consisting essentially of lignites containing calcium hydroxide, leonardite, leonardite with potassium, leonardite with gyp, organophilic leonardite, lignin-based powders, bitumens and mixtures thereof.

5.(Amended) The pelletized dense additive of claim 1 wherein the base material further includes compounds selected from the group [that substantially consists] consisting essentially of lignosulfonates, lignosulfonates with chrome, lignosulfonates with calcium, lignosulfonates with iron, lignosulfonates with tin, lignosulfonates with zinc lignosulfonates with heavy metals and mixtures thereof.

6.(Amended) The pelletized dense additive of claim 1 wherein the base material further includes compounds selected from the group [that substantially consists] consisting essentially of asphalt, sodium sulfonate asphalt, potassium sulfonate asphalt and mixtures thereof.

7.(Amended) The pelletized dense additive of claim 1 wherein the base material further includes compounds selected from the group [that substantially consists] consisting essentially of clays, organophilic clays, attapulgite clays, montmorillonite clays, kaolinite clays, calcined clays and mixtures thereof.

8.(Amended) The pelletized dense additive of claim 1 wherein the base material further includes compounds selected from the group [that substantially consists] consisting essentially of polyacrylate powders, polyacrylamide homopolymers, polyacrylamide copolymers, polyanionic cellulose, cellulosic polymers and mixtures thereof.

9.(Amended) The pelletized dense additive of claim 1 wherein the base material further includes compounds selected from the group [that substantially consists] consisting essentially of xantham gums, metal silicates, vegetable starches, fatty acids, cellulose compounds, barium sulfate, hematite, hydroxyethylcellulose, sodium chlorides, calcium chloride, potassium chloride, bromides, polyphosphate, sodium, calcium, zinc, gilsonite, graphite, petroleum coke, calcine coke, Rockwool insulation and mixtures thereof.

10.(Amended) The pelletized dense additive of claims 1-9 further comprising a binding agent selected from the group [substantially] consisting essentially of clays, guar gum, lignosulfonate, wood sugar, starch and mixtures thereof.

11. The pelletized dense additive of claim 1 wherein the base material is a mixture of two or more base materials wherein one of the base materials being an organic material.

12.(Amended) The pelletized dense additive of claim 4 wherein the organic material is selected from the group [substantially] consisting essentially of ground wood, pine bark, fruit pomace, vegetable pomace, yellow pine, pine bark, corn cobs, peanut hulls, pecan pits, almond shell, corn cob outers, bees wings, cotton burrs, kenaf, sillage, oat hulls, rice hulls, seed shells, sunflower, flax, linseed, cocoa bean, feathers, peat moss, jute, flax, mohair, wool, [paper], sugar cane, bagasse, sawdust, bamboo, cork, popcorn, tapioca, grain sorghum and soluble gums.

13.(Amended) The pelletized dense additive of claims 1[-12] wherein the pellets have a diameter substantially in the range of 1/8 inch to 3/4 inch and a length substantially in the range of 1/8 inch to 2 inches.